



# NATURAL RESOURCES

Photo courtesy of USFWS.



Bottomland hardwood forest ecosystems, pictured here in the USFWS Trinity River National Wildlife Refuge, are one of many important habitats for East Texas species.

## East Texas Initiative

Introducing a New Stakeholder-driven Approach to Conserving East Texas' Rare Flora and Fauna.

By Lauren Borland and Colin McDonald

Prior to the summer of 2019, river authorities in East Texas had little reason to be concerned about or involved with the federal listing of endangered species. The species listed by the U.S. Fish and Wildlife Service (USFWS) either did not have a regulatory impact of their operations or compliance was handled by the U.S. Army Corps of Engineers.

All of that changed when the Texas Department of Transportation (TxDOT) found the state-listed Louisiana pigtoe, a native freshwater mussel currently considered for federal listing under the Endangered Species Act (ESA), in a canal operated by the Lower Neches Valley Authority (LNVA). In less than a month, LNVA went from being a non-participant to having one of the most active mussel

research teams in Texas. Neighboring river authorities took note and followed suit.

Meanwhile, forestry groups in East Texas were engaging in a growing movement known as Conservation Without Conflict. This industry-led program seeks to find ways to encourage landowners to conduct and document conservation work without the risk of increased liability from federal regulation.

Stakeholder involvement in species conservation has never been more critical. The USFWS is gathering data and considering taking action on over a dozen East Texas species – two mussels, two turtles, a bat, a snake, a skunk and a half dozen plants — all of which are poorly understood. While each species is unique, the Natural Resources

### FEATURED IN THIS ISSUE:

EAST TEXAS  
INITIATIVE

TRACES OF LIFE  
UNDERGROUND

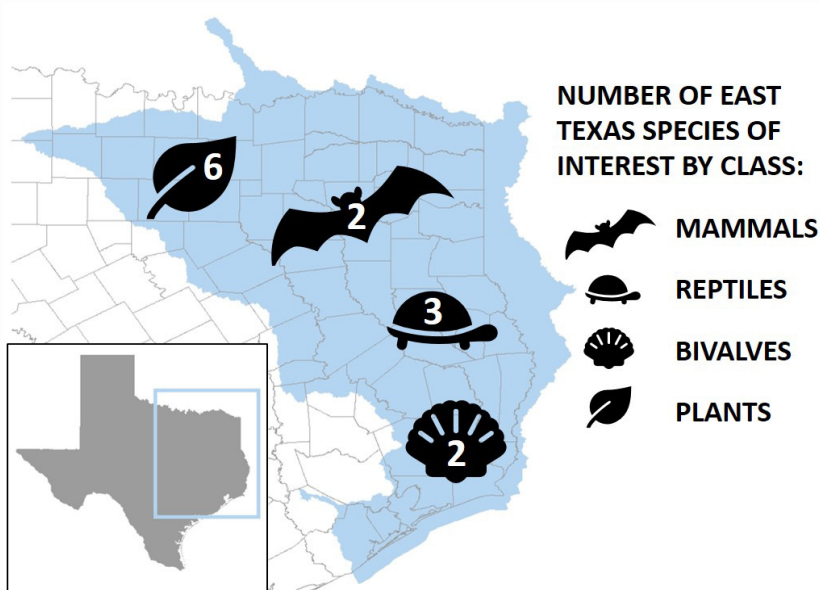
SPECIES HIGHLIGHT

RESEARCH IN  
PROGRESS

### THE COMPTROLLER'S ROLE IN SPECIES RESEARCH

The Natural Resources program provides technical, scientific and policy expertise to help Texans stay up-to-date and engaged with Endangered Species Act (ESA) issues. The program collaborates with stakeholders to identify knowledge gaps and support ecological research to contribute to the ESA listing process. As partners with the Natural Resources program, private landowners, communities and businesses can contribute real-time data and local knowledge to ESA discussions and long-term conservation strategies.

## EAST TEXAS INITIATIVE PROJECT AREA



*The East Texas Initiative seeks to facilitate the long-term conservation of a wide array of species of interest.*

program saw an opportunity to examine the larger ecosystem and apply the available science to increase the efficacy of local stakeholders' collective conservation efforts.

By considering the entire landscape, including the array of plants, animals and people involved, policymakers may promote stakeholder buy-in and cohesive, long-term conservation. Throughout the process, engaging members of the community and tapping into their intimate knowledge of the land affords additional insight into species distribution and habitat condition.

*A male western chicken turtle stretches out its characteristically long neck. Researchers at the Environmental Institute of Houston are surveying for the species as a part of the Comptroller's East Texas Initiative.*



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The East Texas Initiative seeks to accomplish two goals. First, the Natural Resources program will facilitate regular communication between East Texas stakeholders and USFWS so both have the information they need to operate. Second, the program will incorporate further discussions within East Texas communities to identify the priority gaps in knowledge needed to characterize species status. The Natural Resources program can fund research to address these gaps and develop the science-driven tools stakeholders need for long-term ESA compliance.

To kick off the initiative, the Comptroller's office hosted an online meeting on April 1 to foster clear communication between the USFWS and any local stakeholders interested in ESA processes. The USFWS summarized ongoing and planned species status assessment (SSA) and recovery documents for the species of interest. The Comptroller's Natural Resources program outlined its commitment to funding research in East Texas for the next few years.

The process is only just beginning. Future work may support effective and affordable survey methodologies for long-term monitoring, baseline survey efforts or a full review, analysis and distribution of existing data. Join the conversation now to provide input to or get involved with the research identification science team, weigh in on different avenues for outreach and communication or give additional feedback. Contact the Natural Resources program to learn how to become involved in the long-term conservation of East Texas. ■



# Traces Underground:

## Innovative Tools Open a New Window into One of the Most Difficult-to-Study Ecosystems in Texas

by Colin McDonald

A new window may soon open into one of the most economically important and difficult-to-study ecosystems in Texas via environmental DNA (eDNA).

The Edwards-Trinity aquifer system provides water supplies directly or indirectly for every city from Del Rio to Salado, as well as the baseflow for every river from the Rio Grande to the Colorado. From its inaccessible and submerged labyrinth of tunnels, caverns and crevasses to its spring orifices, the karstic aquifer system provides habitat for species found nowhere else that are protected by the Endangered Species Act (ESA).

While much depends on these aquifers, little is known about the species living in the world submerged beneath the I-35 corridor. There are catfish swimming a thousand feet below the sidewalks of San Antonio. There are troglobitic invertebrates, creatures that live only underground, that biologists have never recorded. Of the relatively well-studied species, like the endangered salamanders of Austin's Barton Springs, basic information such as their full range within the aquifer system remains unknown.

The application of eDNA could change that. Every species in the aquifer system leaves a trace of themselves in the water — fragments of DNA discarded when they shed, defecate, mate, give birth or die. These fragments can be picked up as easily as taking water from a swimming hole or groundwater well.

In 2019, with a grant from the Texas Parks and Wildlife Department (TPWD), Dr. David Hillis' lab at the University of Texas at Austin proved that eDNA could be collected and used to identify the salamander species it came from. With additional funding from the Natural Resources program, Hillis and lab members Ruben Tovar and Tom Devitt, along with Andy Gluesenkamp from the San Antonio Zoo, will

Recently discovered near the Lower Pedernales River, this salamander species is a member of the *Eurycea* genus and will be part of the eDNA study.



Photo courtesy of Tom Devitt.

continue their research. The team will develop tools to establish an accurate, affordable and easily replicable methodology to evaluate eDNA from all the known salamanders living in the aquifer system.

Coordinating with biologists at the U.S. Fish and Wildlife Service and TPWD, Hillis' lab will process samples from wells, caves and springs throughout the Edwards-Trinity aquifer region to establish the ranges of these species.

### Every species in the aquifer system leaves a trace of themselves in the water.

In the lab, the biologists will create a library of eDNA samples across the full extent of the aquifer to support future research on other aquifer species. All data and methodologies developed under the contract will be made available to the public for free. By collecting a large baseline of samples across the entire aquifer system, future researchers will be able to monitor changes in the ecosystem, rendering the Edwards-Trinity aquifer system a little less mysterious. ■

## SPECIES HIGHLIGHT

### RIO GRANDE SPECIES

by Colin McDonald

Species living in, below and next to the Rio Grande are going to get more attention from the U.S. Fish and Wildlife Service (USFWS) in the coming years.

By spring 2021, the USFWS will complete a review of the status of the Rio Grande cooter, a turtle found from southern New Mexico down to the Rio Grande Valley and northern Mexico. Two mussels found in the Texas reach of the Rio Grande, the Mexican fawnsfoot and Salina mucket, will undergo reviews in 2022. Downstream, the black-spotted newt, a small amphibian living in wetlands across the Rio Grande Valley up to Corpus Christi, awaits a review date.

The Natural Resources program is partnered with species experts across the state to collect data on these species prior to the USFWS' ESA listing decisions.

*The Rio Grande cooter (Pseudemys gorzugi) is one of four Rio Grande species awaiting a listing decision under the Endangered Species Act.*



Photo courtesy of Dr. Drew R. Davis.

## SPECIES CENSUS TO FEDERAL STATUS

by Chelsea Jones

Like the 2020 Census, the U.S. Fish and Wildlife Service (USFWS) needs an up-to-date, accurate count of rare species to inform listing and recovery decisions under the Endangered Species Act (ESA).

In Texas, where 95 percent of land is privately held, landowners can work with the Natural Resources program and its research partners to survey plants and wildlife living behind closed gates, under barbed wire or perched on fence posts.

Participating landowners maintain discretion over their information through the program's confidentiality provisions — protecting the landowner while ensuring the USFWS receives the data it needs to make well-informed decisions.

Contact the Natural Resources program to support species science in your community.



Private landowners can host biological surveys to support an accurate species count.

## RESEARCH IN PROGRESS: PLAINS SPOTTED SKUNK



Photo courtesy of Dr. Robert C. Dowler.

A rare daytime sighting of an ear-tagged plains spotted skunk in the Katy Prairie.

by Lauren Borland

The plains spotted skunk is a relatively small species, exhibiting spots rather than the iconic striped coat of its close relatives. Historically, plains spotted skunks have been observed in 13 states across the Midwest and southern United States.

Researchers at Angelo State University have found the species in the Katy Prairie, a unique, rapidly changing ecosystem in the Greater Houston area. With urban development booming, it is important to understand how the plains spotted skunk is using its environment and responding to land management strategies.

Researchers keep an eye on the mammal through game cameras, live trapping and GPS tracking collars. Meanwhile, they also survey vegetation communities around dens and assess different land management practices across the ecosystem. By analyzing this information together, researchers can identify patterns of habitat selection or avoidance and gain a better understanding of where the skunk likes to spend its time.

Ultimately, this research will inform area landowners about potential voluntary conservation efforts for the plains spotted skunk. While there are still a few seasons' worth of data to be collected and analyzed, the project should provide insight into the type of habitat that benefits the plains spotted skunk in this coastal prairie ecosystem. ■

## FALL 2020 OUTREACH

### MATAGORDA BAY ECOSYSTEM ASSESSMENT PUBLIC MEETING #2

Palacios, Texas • October 2020

Join Natural Resources program staff and researchers as they share updates on their ongoing exploration of Matagorda Bay.

### EAST TEXAS INITIATIVE UPDATE

Online webinar • October 2020

Stay up to date on stakeholder-led research to inform the conservation of East Texas species.

## WE ARE HERE

For more information, including research updates, project reports and meeting announcements, explore our website or follow us on social media.



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<https://www.youtube.com/user/txcomptroller>

Research endangered species documents on the **FEDERAL REGISTER** website.

<https://www.federalregister.gov/endangered-threatened-species>

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